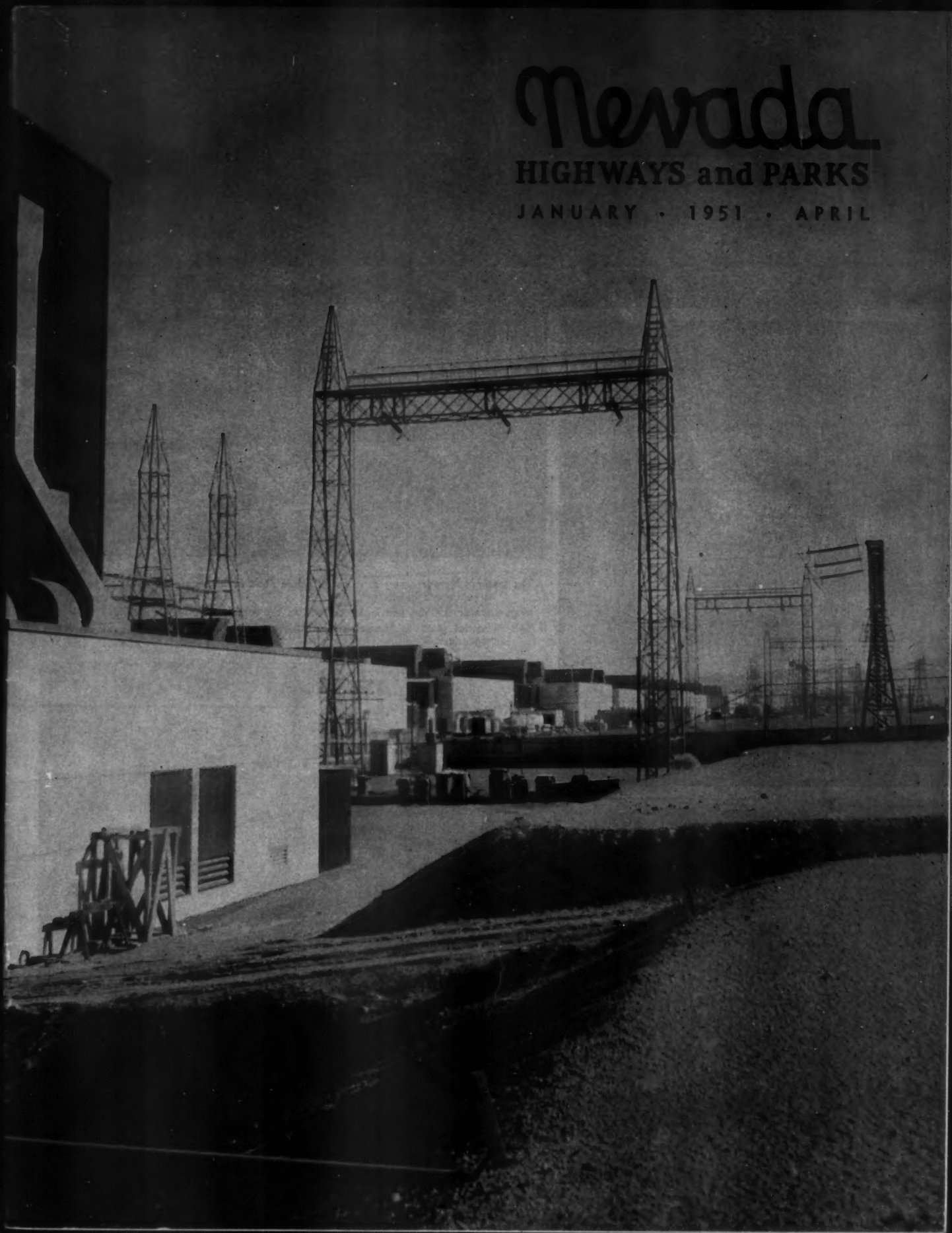
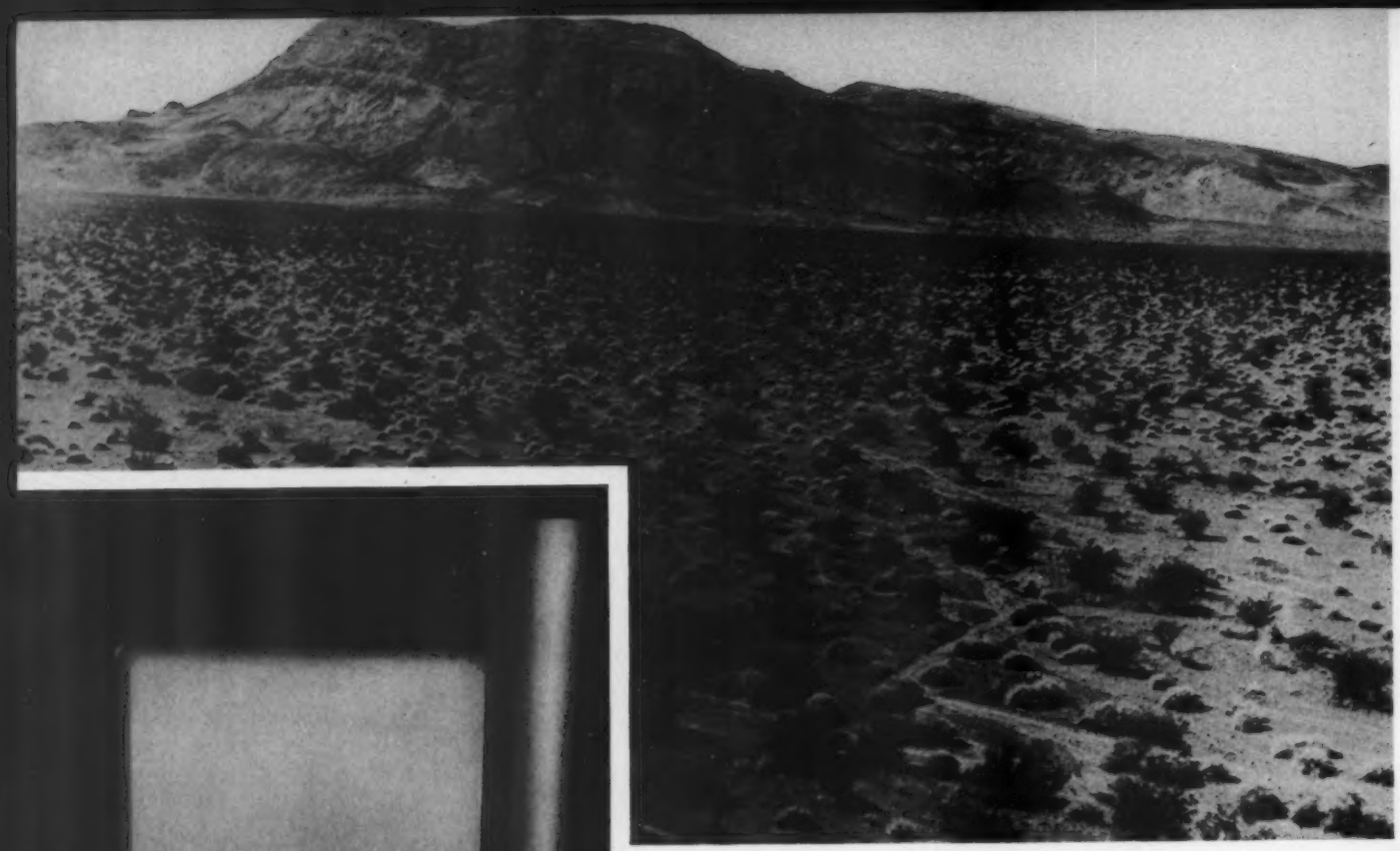
# Nevada

## HIGHWAYS and PARKS

JANUARY · 1951 · APRIL

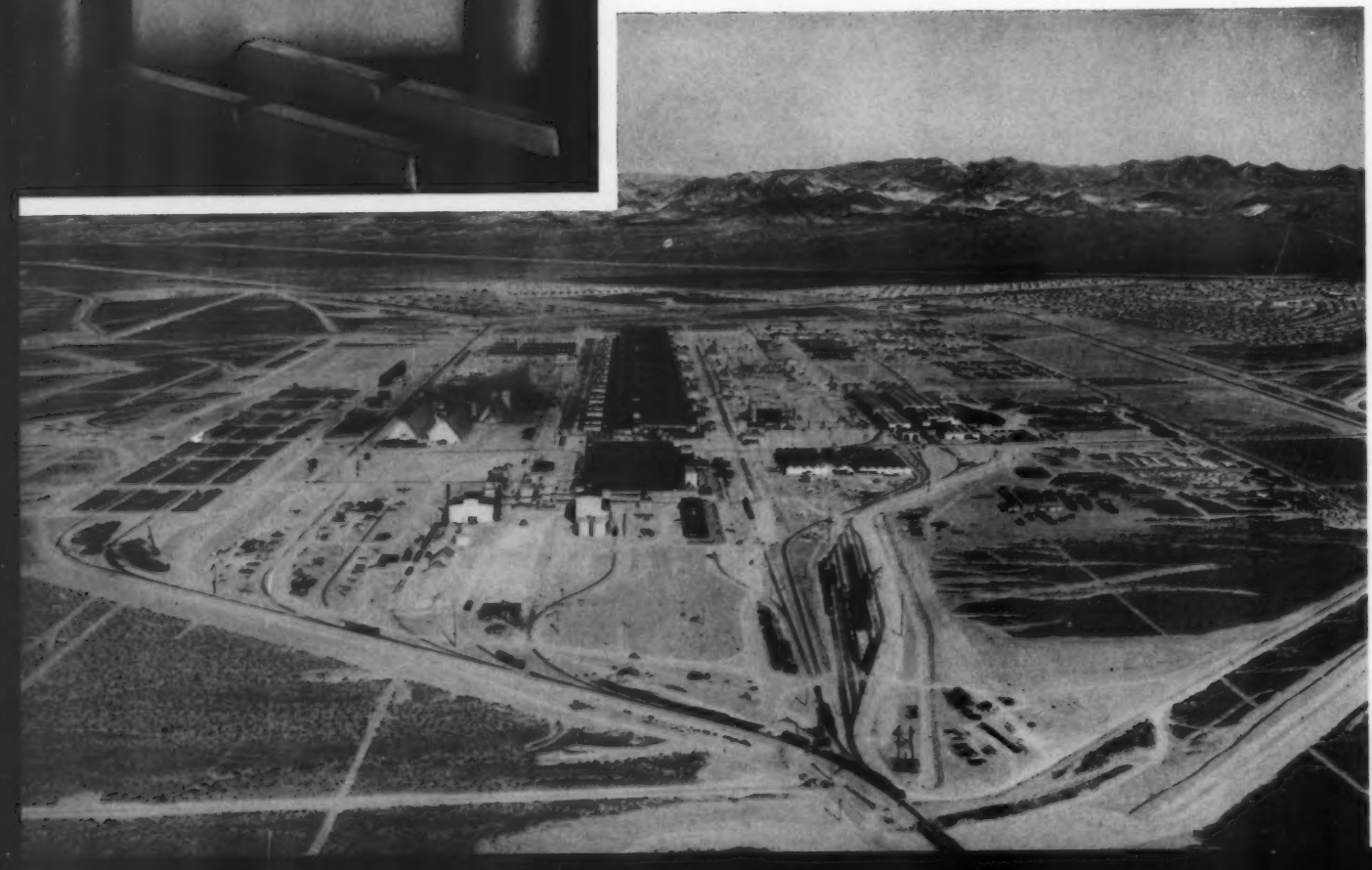




The southern Nevada desert as it looked before Basic Magnesium plant came to disturb its peace and quiet.

Magnesium bars, slabs, and ingots came from the factory.

This industrial plant at Henderson, Nevada, produced millions of pounds of metal magnesium.



# NEVADA
## HIGHWAYS *and* PARKS

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THE FRONT COVER

The Basic Magnesium plant at Henderson, Nevada, is back in operation again after several years of idleness following the end of World War II. This photo shows the power line towers paralleling the mile-long row of buildings, now devoted to chemicals manufacturing, and metals processing in most of the 10 building units. At present the State of Nevada has proprietary ownership of the big industrial plant. Power used in the plant comes from Hoover Dam.


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# *Henderson---From Desolate Desert to a City of Destiny*

FOLKS OUT here called the 2,000 acres of desert emptiness 13 miles south of Las Vegas, the Basic Townsite while the $150,000,000 magnesium plant was shaping up but after the post office was completed and dedicated on January 10, 1944, the newborn desert city was officially named Henderson, Nevada. The name honors Charles W. Henderson, a former chairman of the Reconstruction Finance Corporation, who was a native Nevadan.

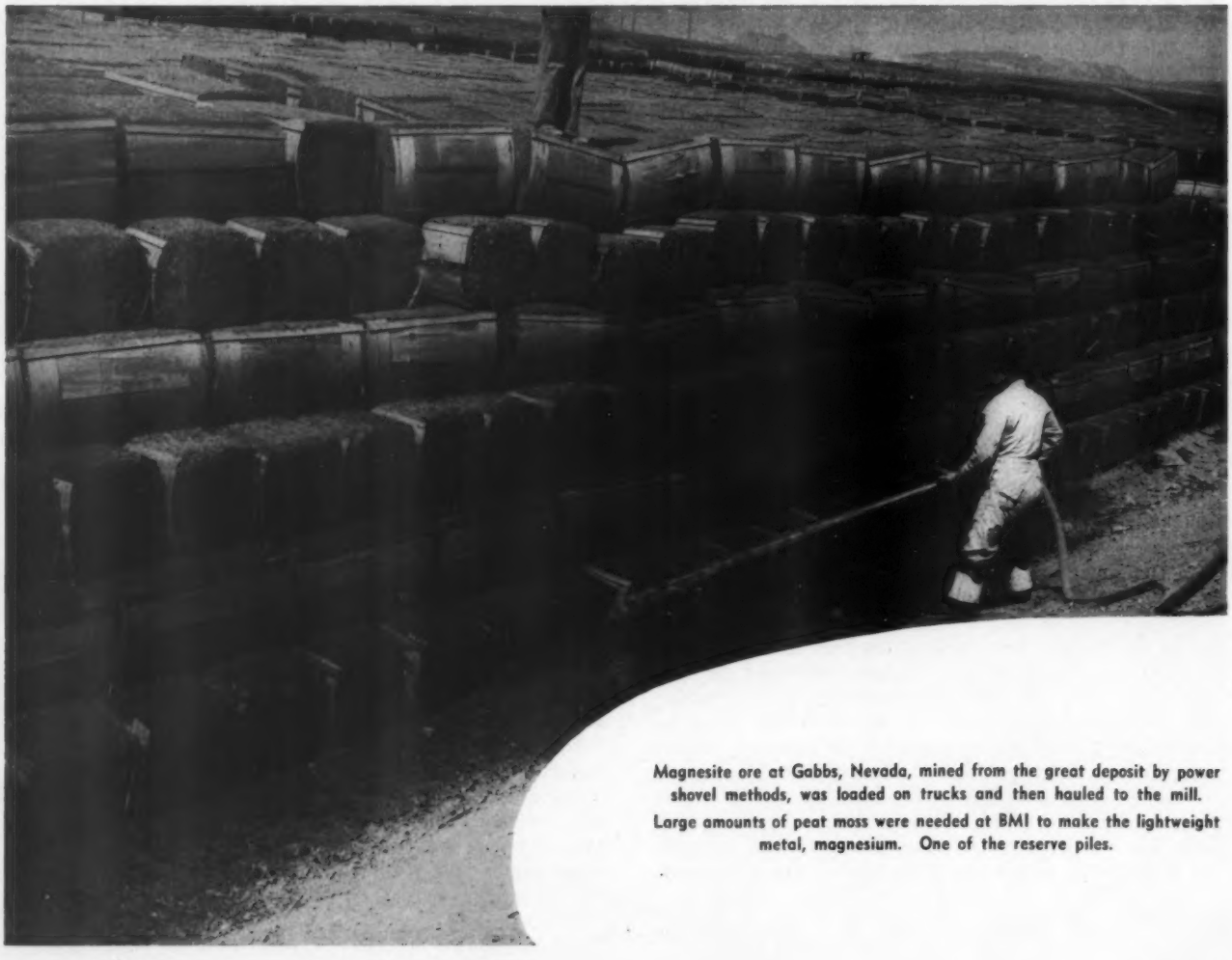
Contractors on the job also called it the Townsite but in fact the place wasn't anything more than a vast stretch of desolate land shimmering in the southern Nevada heat before the McNeil Construction Company turned the first spadeful of dirt which started the huge project. There wasn't enough water on the land, or even near the surface to keep much of anything alive. Greasewood and sagebrush were the exceptions because they got along pretty well in their native environment. It seldom rains in that country and the land was dry. Even the lizards had a hard go of it to find any bugs or beetles. Coyotes sneaked around the place occasionally looking for a meal but it's doubtful if many ever got fat on what they found. A number of cactus species which seldom need water to thrive grew among the rocks and gravelly soil. A highway paralleled the region on the eastern fringe, but travelers usually drove by without stopping on their way to or from Las Vegas, Boulder City or Searchlight. No one lived out there before the site was picked as a factory location. People just hurried through, anxious to get up the hill toward Railroad Pass or Boulder City. A gradual uphill climb on the road from Vegas to Boulder City gave travelers a chance to get a distant view of the city of Las Vegas sprawled like an oasis in the desert, and also the colorful surrounding mountains as they rolled toward the Nevada city of destiny. The solitude and spell of this lonely spot was magnificent but no one wanted an extended diet of it. It was, indeed, one of the loneliest places anywhere to be found on the southern desert country about 20 miles north from the Colorado River. The desert, with all its implications, dominated the area.

That was the picture before the huge Basic Magnesium plant was constructed. Things changed a lot, and fast in a short time, when that war products project was started and rapidly completed. Those 2,000 acres of desert emptiness came to life and were transformed into a bustling, modern, preplanned factory town of more than 5,000 inhabitants and became a delightful place to live.

When the world was passing through the early stages of World War II, back in 1941, this broad expanse of desert land near the big western river was selected as a site for one of the largest wartime factories ever to be erected in the United States. Eventually it became the town of Henderson, Nevada, now the fourth largest community in the State.

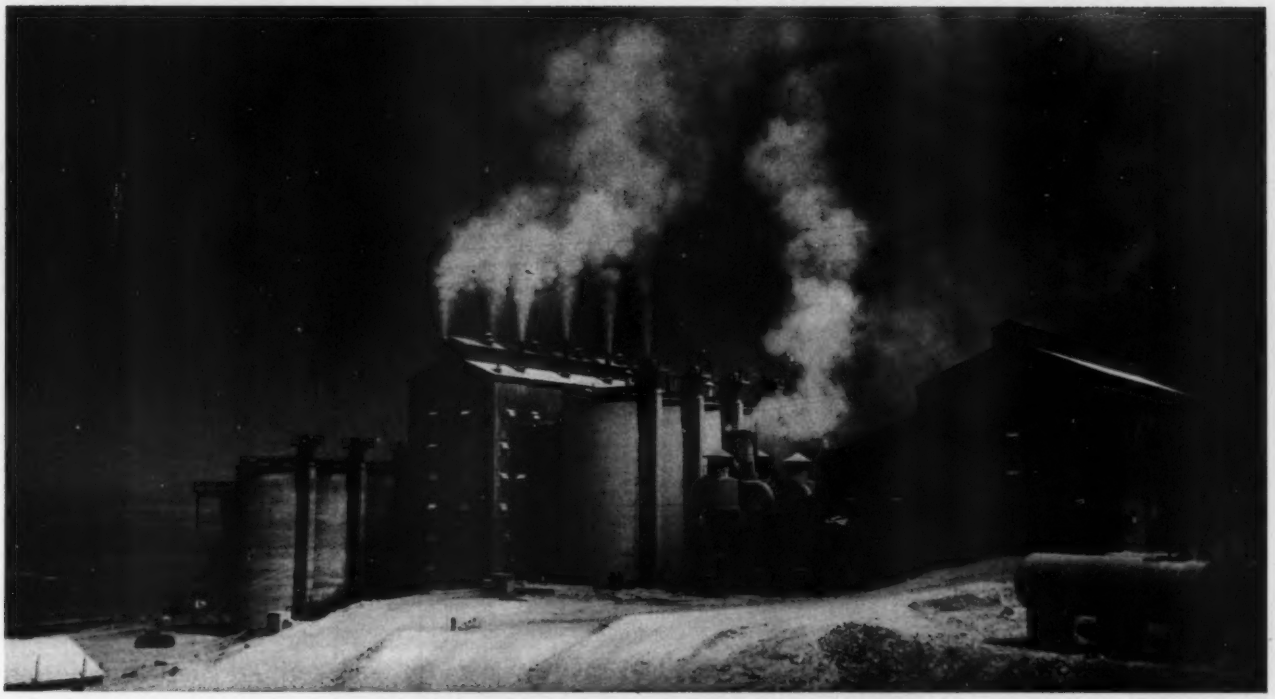
Primary reason for selecting this place as a site for a gigantic industrial center of such major proportions as the Basic Magnesium, Inc. plant (BMI for short) was a crying need for the metal magnesium. Contributory factors were accessibility of raw materials, adequate water supplies, ample power facilities, good transportation service, comparative safety from enemy attack, together with the fact that it was entirely feasible to build a new town, from scratch, which would supplement the factory units. Urgency was one of the main objectives. Securing labor to operate the machinery when the plant was ready to function constituted a problem not too difficult to solve even in a region where no big factories had before existed.

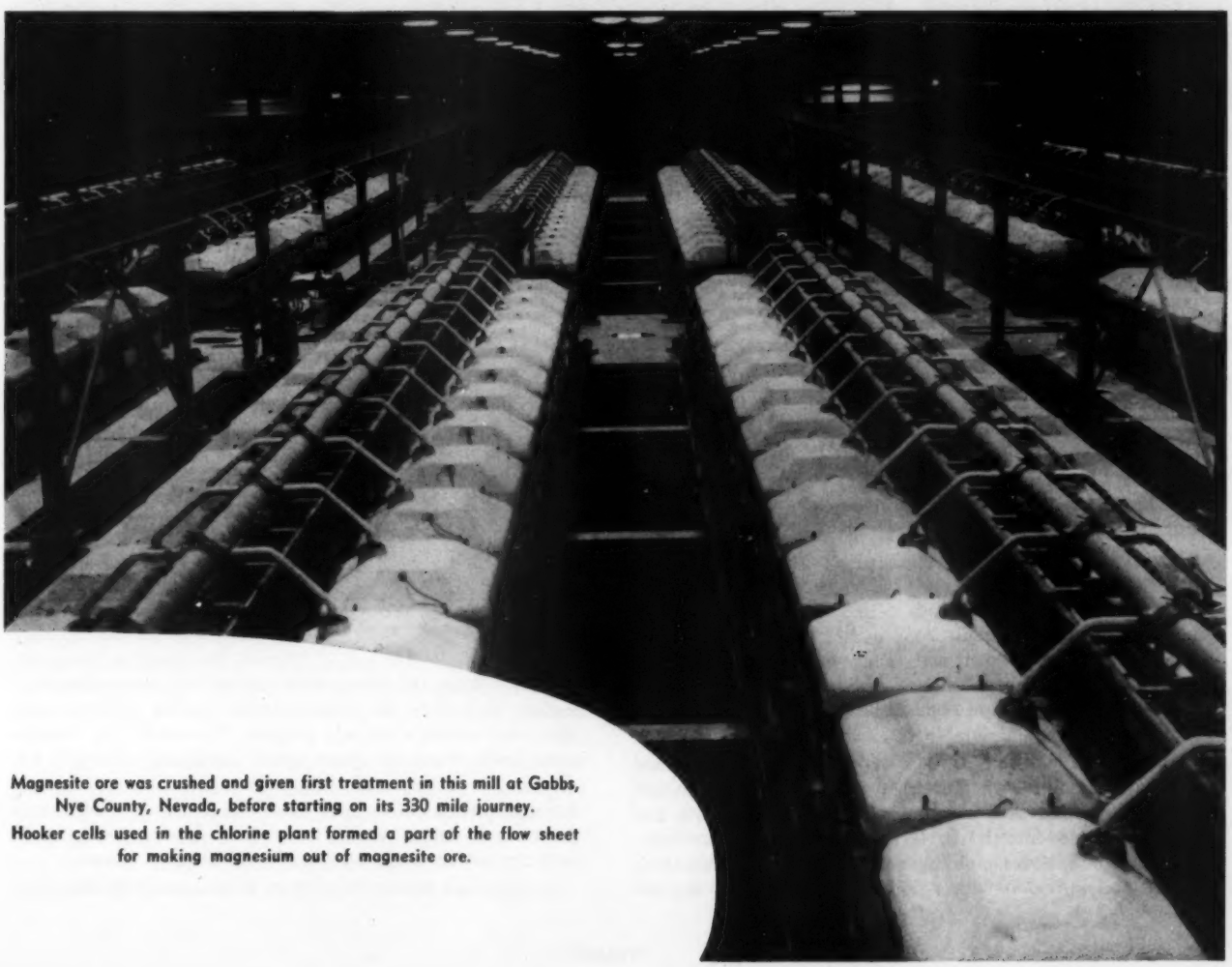
For a vital, strategic, badly needed material, the Basic Magnesium plant at Henderson was built to process vast supplies of magnesite ores existing at a place called Gabbs, Nevada, 330 miles northerly from Las Vegas and the reduction plant. Magnesite is defined as a native magnesium carbonate. This magnesium carbonate was used at BMI. Magnesite has a color



Magnesite ore at Gabbs, Nevada, mined from the great deposit by power shovel methods, was loaded on trucks and then hauled to the mill.

Large amounts of peat moss were needed at BMI to make the lightweight metal, magnesium. One of the reserve piles.





**Magnesite ore was crushed and given first treatment in this mill at Gabbs, Nye County, Nevada, before starting on its 330 mile journey.**

**Hooker cells used in the chlorine plant formed a part of the flow sheet for making magnesium out of magnesite ore.**

varying between a dark blue-gray and a faintly bluish-white. At Gabbs the magnesite outcrops about half way up the mountain slope above the valley and consists of a dense, thickly bedded, very hard rock in a formation which is variable but generally dips westward away from the hill. Deposits of enormous volume assured ample supplies for a long time. Total tonnage of magnesite, in fact, almost staggers the imagination.

Gabbs, however, was completely isolated, lacked power facilities and had very little water accessible which would be needed for operation of a plant of the size designed for BMI. It was less feasible to construct the processing plant at Gabbs because of these shortcomings so the processing units were established at Henderson. This, however, involved a long haul. Over the rails it meant hauling to Hazen, Nevada, to the Southern Pacific's main line, then across the State to Salt Lake City, and then south over the Union Pacific's Los Angeles division to Las Vegas and the plant at Henderson, a distance of 1,100 miles. There was no direct rail connection between Gabbs and Las Vegas, but there was a good highway, U S 95 (The Bonanza Highway), and this was later used to haul the ores from Gabbs to Henderson, a distance of over 330 miles.

Gabbs at the time was about as isolated a spot as one could find in the entire United States. It could hardly be termed a village because only a few prospectors and miners had set up their camp near the ore deposits. One dirt road served as an access way. The nearest railroad station was at Luning, Nevada, 32 miles west, where the Southern Pacific could establish a railhead. In due course the highway between Gabbs and Luning was hard-surfaced and afforded an excellent outlet for the ores on their journey to the plant at Henderson.

The plant was erected and put into operation rapidly to produce metal magnesium and its by-products. Magnesium was considered the wonder metal of that time and much in demand because of its light weight, toughness of fibre and durability.

Magnesium possesses certain properties of strength and weight advantages even greater in value than aluminum and could be utilized as a substitute for that widely used, and critically needed metal. In fact, magnesium was an indispensable product for building parts of airplanes, incendiary bombs and in making tracer bullets, all top priority requirements during progress of the war. So the Basic Magnesium plant broke through the sagebrush at Henderson and disturbed the desert solitude which had prevailed for geological ages.

Ground was broken for the immense structure on September 15, 1941, even before the Japs attacked Pearl Harbor. The BMI plant operated continuously from the time its first production units were completed until November 15, 1944. Then the wheels were stopped, the plant shut down, most of the personnel dismissed and the payrolls terminated. The war was nearing a crisis and the need for magnesium had diminished.

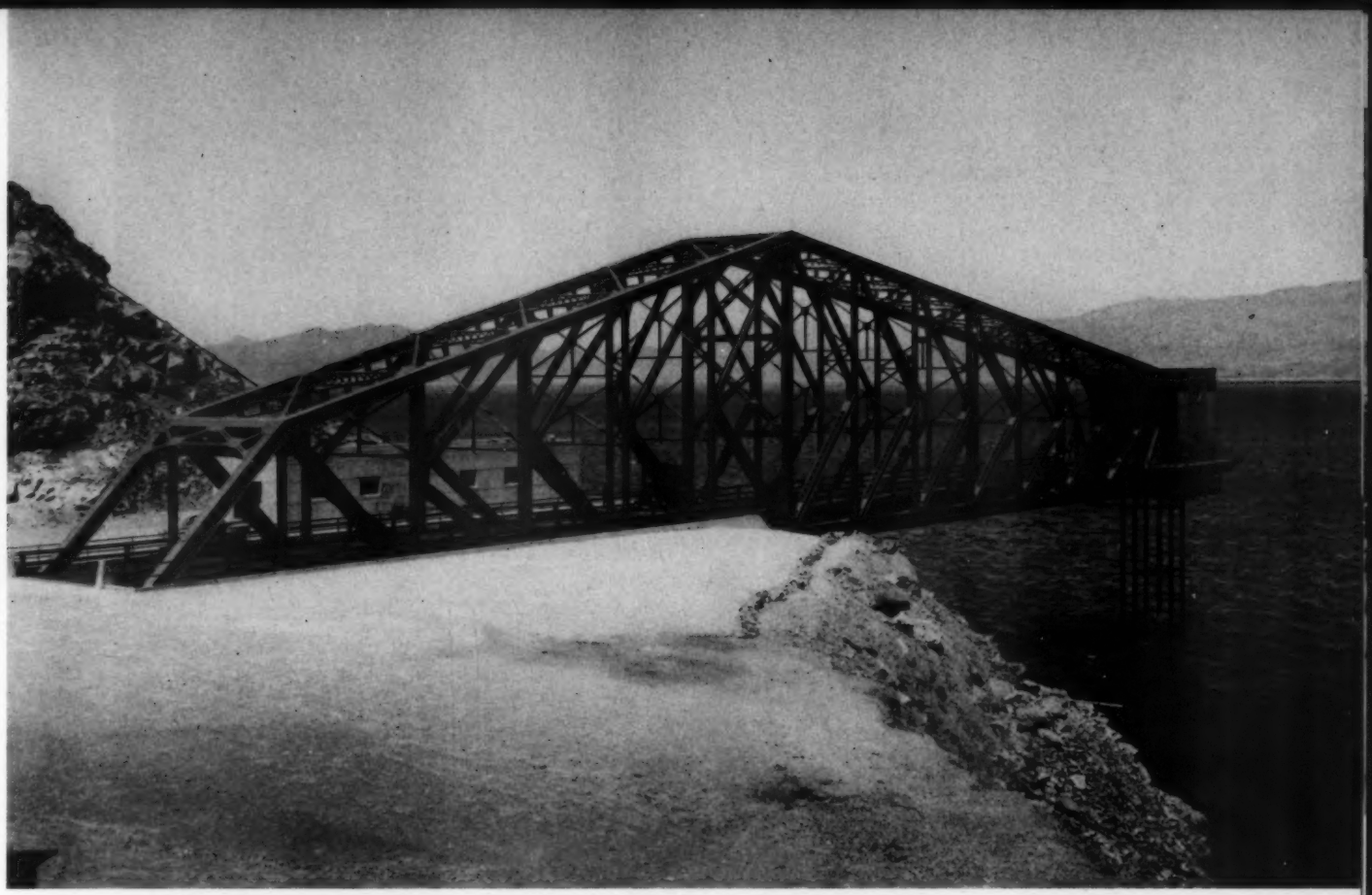
**One of the pots used in making the melt for magnesium metal, at the Henderson plant.**

During the 807 days of the plant's continuous operation it produced 166,322,686 pounds of marketable, refined or alloyed magnesium in the shape of ingots, billets and slabs.

World War II has come and gone. It is now a part of the world's rapidly moving history. Those pages of the record which refer to this gigantic plant at Henderson will show that the project did its full share to carry on the war successfully. When the plant shut down some of the machinery was moved, the silver bus bars returned as bullion to Uncle Sam, the owner, and the desert started creeping in toward the paved streets. Southern Nevada folks became very much concerned lest the plant become entirely dismantled and the ground turned back to the coyotes. Many of the workers of BMI moved on to other places to assume other tasks. The future of the big plant was shrouded in doubt because metal magnesium, under normal conditions, can be produced from other formulas such as extraction from brine, or sea water, at a lower cost. It was feared the huge war plant would become a "deceased war baby," and its potentialities lost.

Southern Nevadans are made of pretty tough fibre and not easily licked. Group action was inaugurated to prevent the plant from becoming a peacetime casualty. Ways and means were evolved and the community's leaders, as well as the other citizens, worked diligently and effectively toward a common purpose. They could not visualize a condition where the plant would completely disappear for they knew it was well adapted to peacetime production. Eventually their efforts were successful and today BMI forms the nucleus around which many other factory units can be built and continuously operated in the Henderson area.

It might not be out of order to go back over the history of



**Looks like a bridge, but it isn't. It's the steel structure supporting water intake pipes on the shore of Lake Mead. The water was piped 20 miles to Henderson.**

the big plant a bit. Its gigantic size and capacity for housing manufacturing units alone would justify recital of a little more detail. In a State where, prior to its creation, there were only a few small units which could be classified as factory units, BMI was indeed an innovation. There are, in Nevada, a number of smelters and large mills which treat ores of one kind or another, a few lumber mills of varying size, some big railroad shops and roundhouses, and a number of heavy construction firms which have been operating for many years. However, the work of processing, on a large scale, articles of the industrial world, finished and ready for markets had not penetrated very deeply into the economy of this far-flung western State. It was mostly agricultural, grazing, and mining. Various other factors are evidence of this fact and it isn't necessary to go into that phase of Nevada's economic life here. Suffice it to say that, in a broad sense, the Basic Magnesium plant at Henderson is the first concentration of manufacturing units in the State which has been able to accept the challenge of peacetime production. It is not now, however, producing magnesium products, but many of its integral units have been adapted to the manufacture of chemicals and chemical by-products. Other units are being readied to process lead, zinc, silver and titanium ores.

Before the first contract was let on the job there were entirely lacking electrical power facilities. The amount needed for daily use in the completed plant would be enough to light Los Angeles, at that time a city of 1,800,000 inhabitants. There was no water at Henderson and that was a terrific problem. All building materials, and even the raw materials which were destined to keep the mammoth plant operating once it was constructed, had to be hauled over long distances.

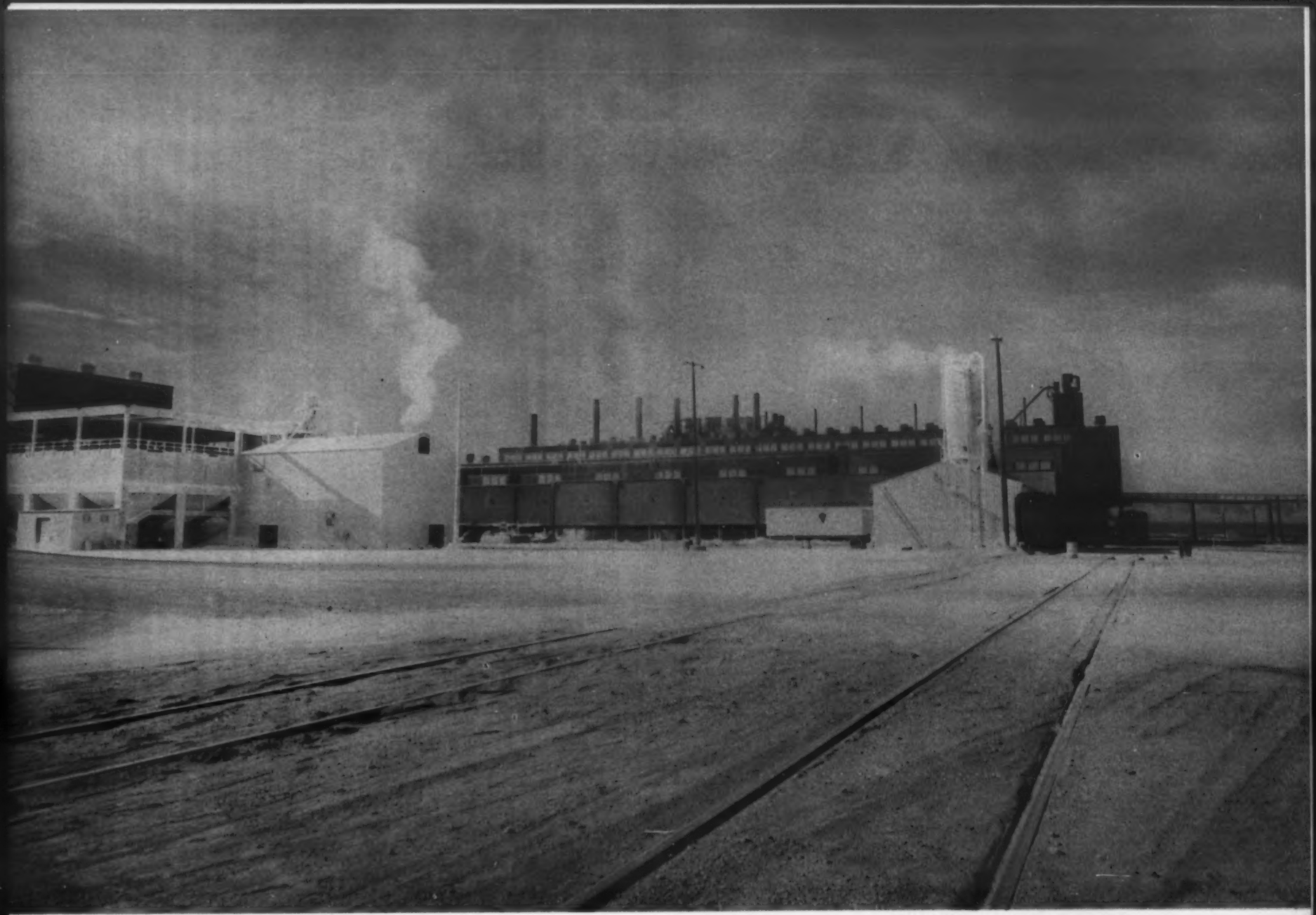
Electric power in ample quantities was to be had at Hoover (Boulder) Dam, less than 20 miles distant, but first it must be carried to the site before it could be used. So heavy transmission lines were put in place. Water was available from Lake Mead, on the Colorado River, for use in the plant and also for household use in the new town, but it had to be carried over mountain and valley to the reservoirs which stored it. First the reservoirs had to be excavated and made ready for the big water mains which were laid to Lake Mead 25 miles away.

All building materials for the construction of BMI had to be hauled in from the outside sources of supply. For this purpose a spur track was constructed connecting with the Union Pacific line at Las Vegas. Concurrent with the construction of the factory units, the erection of housing units on the townsite progressed apace to take care of those who would be employed in the plant.

In addition to the prime ingredient, at the factory, there were accessory articles such as peat moss, salt, coal, and other materials needed.

Furnaces, grinders, tanks, mixers, belts, motors, conveyors, pumps, blowers, pipes, ducts, and countless other unrecognizable contraptions were included in the list of details necessary to operate the plant.

Other titanic construction jobs—Hoover Dam, Grand Coulee Dam, the Empire State Building, Willow Run—have been big but relatively simple, using vast quantities of a few funda-



A part of Western Electrochemical Company's unit of the big Basic factory plant at Henderson, Nevada. This firm specializes in chemical products for the trade.

Residents of this comparatively new town of Henderson enjoy all the conveniences found in much larger cities. In fact, Henderson was preplanned and built along modern lines without any handicap of older properties which might have fallen into disrepair. These conveniences include the brightly lighted motion picture theater, the super markets, fully equipped drug stores and other business establishments catering to the present-day trend of trade. This 80-bed hospital was originally inaugurated as a part of the BMI plant service. Several years ago it was taken over by private management, renamed Saint Rose of Lima Hospital and now serves Henderson as well as citizens of other nearby communities.

Silver and copper bus bars were used as electrical connections to the big batteries in the Henderson plant.

Specially designed trucks were used to convey the raw material from Gabbs to the plant over Nevada's paved highways.

Pouring a melt of magnesium metal at BMI when the plant was in full operation during World War II.

Magnesium bars by the hundreds were stacked and shipped as needed. The bars were hauled on light factory trucks, operated by women.

The Basic plant at Henderson is a symbol as well as a successful manufacturing project. It was originally built to process vast supplies of magnesite ores obtained from Gabbs, Nye County, 330 miles north of Henderson. The entire structure, almost a mile long and containing 10 separate processing units plus accessory buildings, was devoted to the production of magnesium metal during World War II. Since the end of the war these units have been occupied by manufacturing firms making principally chemical products. Electric power comes from Hoover Dam, about 20 miles distant. This is Nevada's first major concentration of factory units in which raw materials are processed into finished products for commercial trade.

mental materials, such as concrete, steel, stone, and lumber. Basic Magnesium required larger quantities of certain materials than had ever before been used on any one job—for instance, 6,000,000 pounds of copper to make up the largest bus-bar installation in the world; 50,000 tons of structural steel; and 30,000,000 feet of lumber, enough to build a city of 40,000 inhabitants. There was also a bewildering variety of other things from platinum to bolts of muslin. One-hundred-ton electric transformers were needed to feed power to the plant and for the first time in the history of the world large silver planks were used for electrical bus bars—more than $23,313,-300 worth. Some of these bus bars were planks of pure silver 12 feet long. They would make a stack of silver dollars more than 30 miles high. All of this silver, after serving its purpose at the BMI plant at Henderson, Nevada, was sent back to the United States government from which it had been "loaned" for BMI use.

Nearly 20,000,000 bricks, ranging from common building bricks to acid and fire resistant refractories, costing approximately $15,000,000 were used in the construction of the plant.

Specially designed motor vehicles were assembled to haul the calcined magnesite from Gabbs, over Nevada Highway 23, and U S Highway 95, to the plant at Henderson. Dozens of these big trucks and trailers were rolling over the roads day and night during the era when the BMI plant was functioning. The place was a beehive of industry, and at one time during construction progress there were more than 10,000 persons employed on the job.

Magnesium metal was produced from this huge factory in approximately the following manner:

The ore, chiefly magnesite, was burned at the mine into magnesium oxide. This was taken from the huge deposit by power shovel operation, calcined at the mine, loaded in the specially designed trucks and hauled to Henderson. Shipped to the Henderson plant, this white powder was mixed with coal and peat moss and the mixture fashioned into pellets about the size of tennis balls. The pellets were poured into furnaces into which was pumped chlorine gas. The result, molten magnesium chloride, was drawn off from the bottom of the furnace and piped to electrolytic cells where high voltage direct current separated the magnesium from the chloride. The molten magnesium was ladled off and poured into moulds. Later it was remelted, refined and alloyed, when it was ready to go into airplanes, incendiary bombs, and tracer bullets.

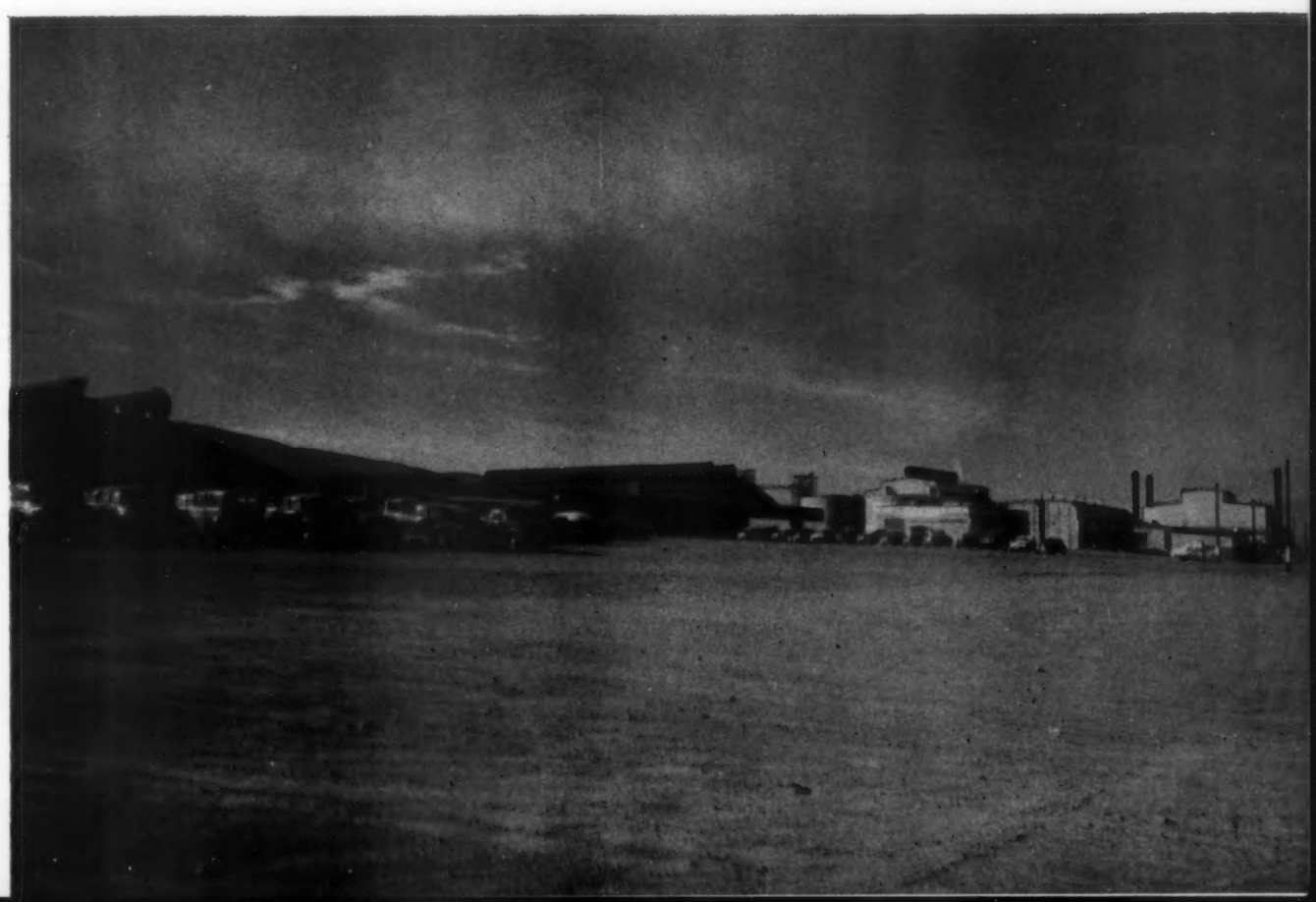
The project was conceived early in 1941 through the efforts of Basic Refractories Company, Cleveland, Ohio. This company owned a number of mining claims in Gabbs Valley, near Luning. Deposits were large bodies of dolomite, magnesite and brucite, and their use prior to the war was almost entirely for the manufacture of refractory bricks and tile.

It was decided to use the electrolytic method of reducing anhydrous magnesium chloride and to that end Basic Refractories made an agreement with the Magnesium Elektron, Ltd., of Manchester, England, for mutual cooperation in creating Basic Magnesium.

In October 1942, Basic Refractories sold its interest to the Anaconda Copper Mining Company which made its first entry into the light metal field. On May 14, 1943, the last brick was laid in the tenth and final metal unit, completing a job begun in September 1941, and establishing a miracle in the desert which many said "couldn't be done."

Originally 1,000 housing units were planned for the townsite

**Stauffer Chemical Company and its affiliate, Montrose Chemical Company of California, occupy this unit ot Basic plant, Henderson, Nevada.**



One corner of the big plant as it appears today, being used by the Western Electrochemical company, producing chemicals for the trade.

These men had much to do with the original organization and operation of the big BMI plant. H. P. Eells, Jr., president, with "mike" in hand; Major Charles J. P. Ball, England, vice president, second from right, with British "shorts."

**BMI employees gathered together on the plant grounds to participate in a war bond rally. The plant employees always met their quota.**

adjacent to the factory. For these units every foot of lumber and every bag of cement had to be hauled in from distant sources. This in itself was a vast undertaking. When the BMI plant was ready to start production the townsite grew and houses began filling, one after another, and the place started taking on the shape of a new city on the Nevada desert. Streets were laid out and paved, sewers installed, hospitals placed in service, super markets developed in the community center, assembly halls set up for employees' recreation, power lines extended for household uses, water taps began gurgling in the houses, and all units were equipped with modern facilities for the greater convenience and comfort of the occupants. Churches were erected, and schools for the community were not overlooked.

When the plant shut down it carried an ominous meaning to the townspeople of southern Nevada. What to do with all the housing units, the factory units and the furnishings. This problem was not long in the solution. While many of the families decided to leave the community for other parts, housing units were filled as rapidly as they became vacant. Las Vegas, the nearest city to BMI, had grown rapidly during the past decade and housing facilities in the city were short. To care for the overflow many moved to Henderson.

The picture has changed to a more cheerful outlook. Southern Nevada leaders concentrated their efforts on bringing about a solution for a practical use of the many units of the Basic Magnesium plant.

Splendid facilities existed; the plant was in excellent condition—it need only be adjusted for other manufacturing lines, and in many cases this readjustment involved moderate expense. The entire plant was divided into components to accommodate a variety of factory products. The water, the power and plant facilities remained. Businessmen of Clark County had faith in the future of the plant and directed their efforts toward securing occupants.

After a series of long consultations and adjustments the BMI plant was turned over to the State of Nevada for its proprietary use and operation.

In 1947, the State Legislature authorized the Colorado River Commission of the State of Nevada, the governing board, to acquire the Basic Magnesium project from the Federal government. Under this Act the Basic Magnesium project was taken over from the War Assets Administration on April 1, 1948, for a purchase price of $24,000,000, under an agreement which would allow the State to pay for the project out of profits earned over a period of 20 years. An arbitration committee was appointed for the purpose of settling any controversial questions of fact which might arise in carrying out the provisions of the agreement. Any time within five years from the date of execution of the agreement the arbitration committee may meet at the discretion of the War Assets Administration and determine on an equitable basis the total minimum payment to be made by the purchaser under the terms of the agreement, which in no event is to exceed $24,000,000.

To date the Colorado River Commission of Nevada has entered into long-term leases, with options to purchase, with the Stauffer Chemical Company of Nevada, the Western Electrochemical Company of Nevada, the United States Lime Products Corporation, the National Lead Company, and the Combined Metals Reduction Company. These are the major basic plant lessees, and in addition there are various small companies operating at BMI.

It is planned to sell BMI, soon, to private individuals or groups.

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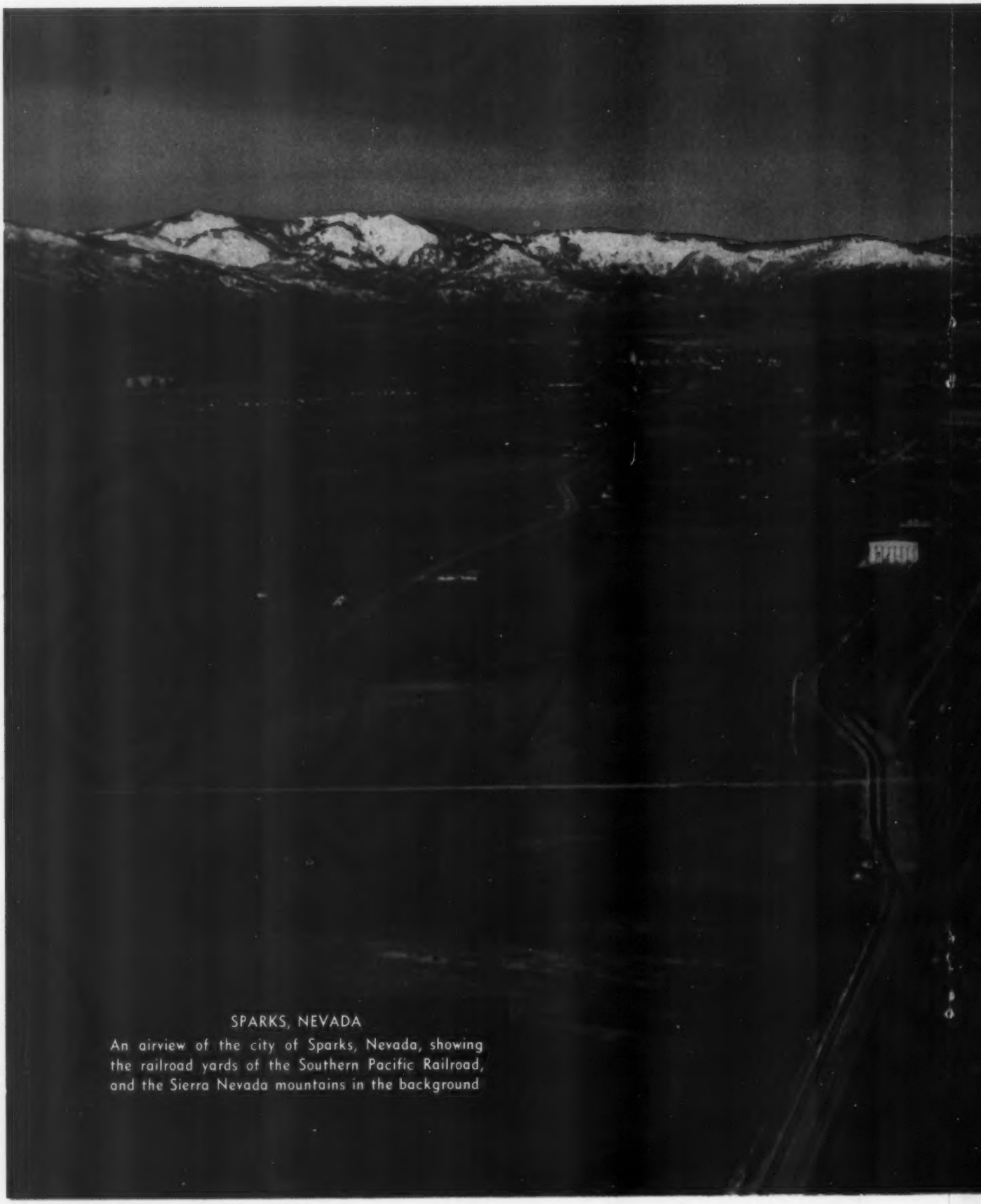


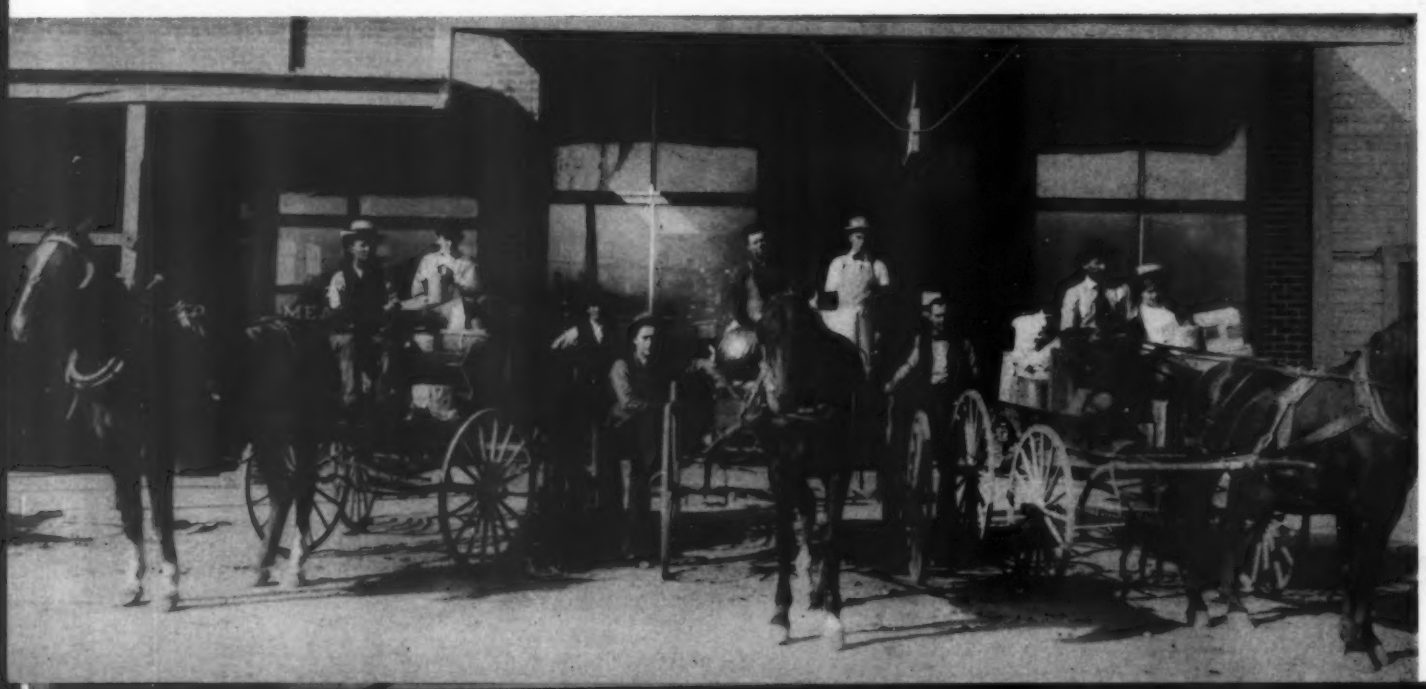
SPARKS, NEVADA

An airview of the city of Sparks, Nevada, showing the railroad yards of the Southern Pacific Railroad, and the Sierra Nevada mountains in the background

This picture was taken in the year 1906 and shows members of the first Sparks Volunteer Fire Department soon after they had progressed from the old bucket brigade stage, wearing their new helmets. They used hand-drawn hose carts for equipment, had kibitzers aplenty at every fire, but the Volunteers worked out their plans and gave Sparks a really good and efficient fire department.

These children, in about 1906, shortly after the town was originated, were playing in the sand near the corner of what is now 17th and B Streets, one of the city's present-day main intersections.

During pre-automobile days the horse and buckboard were put to good service in delivering groceries, meat, vegetables, etc., to the residents of the growing city of Sparks.



# *Sparks, Nevada--Out of the Swamp to a Railroad Town*

FOUNDED IN 1903 by the Southern Pacific Railroad Company, and named in honor of the State's incumbent Governor at the time, Sparks, Nevada, immediately took on the responsibilities of a full-grown railroad division point. This railroad city has kept pace, ever since, with the constantly changing and expanding transportation and servicing facilities of one of the greatest transcontinental railroad systems in the Nation.

Starting from scratch, with nothing but a swamp and two comparatively small ranches as a nucleus on which to build, this very important hub of western Nevada, in Washoe County, has grown to become the third largest in the State and enjoys one of the biggest consistently stable payrolls of any city in Nevada. Sparks now has a population of 8,100, according to the 1950 census.

Its comparatively small stature as a city does not begin to indicate the importance it assumes as an integral part of this great railroad system which serves all of northern Nevada as well as all of central and southern California. Its lines also course eastward across the southern section of the Nation.

Sparks, during its lifetime, has maintained itself as an important division headquarters between Ogden, Utah, 500 miles to the east, and Sacramento, California, 150 miles to the west, and the personnel has upheld the traditions of railroading in true western style.

About 15 miles west of Sparks, the roadbed of the Southern Pacific rail line enters the narrow canyon of the Truckee River and traverses this path for many miles. The Truckee canyon also marks the beginning of the "Big Hill" country of the rocky wall of the Sierra Nevada mountains. Through these rugged mountains the rails snake and climb for mile after mile up to the summit and over, through gorgeous mountain scenery unsurpassed anywhere in western United States. To the east of Sparks the far-flung Nevada mountain and desert country stretches away for four hundred miles. Westbound out of Sparks trains of all classifications, freight and passenger, face a grueling climb over innumerable curves through narrow gorges where heavy forests reach down to the right of way, and the rushing Truckee River often rolls over cascades just a few yards away from long freights or luxurious passenger trains heading for the Truckee Meadows. On top of that the 15- and 20-foot snows during the winter, in the higher elevations, in spite of long protecting snowsheds, make the 3,000 foot climb in less than 30 miles anything but a pleasure ride to train crews.

Eastward the powerful steamers, and more recently the diesels, have to fight the wind and sand storms across broad flatlands in the summer heat and the sub-zero temperatures of winter over long, low grades between Sparks and Ogden. In eastern Nevada the roadbed follows as nearly as practicable the valley lowlands where no excessive summits must be climbed or crossed. For traffic rolling both ways over this Southern Pacific line the Sparks personnel, on the trains and in the yards, have been responsible for keeping millions of dollars worth of high-class rolling stock in good running order.

Sparks has played an important part in the transition of railroading during the past 50 years. From the days of the wood burning boilers and balloon-shaped smokestacks of the two-wheel drive locomotives pulling trains over the rails at a speed of 35 miles an hour, an excessive speed for those days, down to the time of the sleek, purring diesel-driven streamliners, Sparks has taken it all in stride. Its railroad personnel has lived through this transition and the community has thrived as a result of the changes. The town, comprising the very hub of railroading in northern Nevada, has gloried in the experience, and proudly carried out its part of railroading procedure. The transition in passenger travel ranges from the old wooden coaches with wide-open ends down to the air-conditioned palaces on wheels which roll across the Nevada desert at 100 miles per hour.

At the turn of the present century there was no such thing as a town called Sparks, Nevada. So the town grew up in an environment of change, noting every improvement in mechanization as it applied to railroads. With only 50 years of history the town still is a youngster with plenty of vitality and spirit to carry forward over many rugged miles and years of future railroading.

Wadsworth, 30 miles eastward and Reno, 3 miles to the west, were the two most important stations along the railroad line at the time. Wadsworth had served as a division point for the changing of crews and locomotives, but there were no repair shops located there. When company officials decided to straighten the line through western Nevada they also decided to add greater facilities to the division point, and at the same time to move it into Reno. Passenger trains made regular stops at both Wadsworth and Reno, while the freight trains took siding at Wadsworth to let the "flyer" go by. Water and fuel facilities for servicing equipment were located at Wadsworth. All trains passed through the district now known as Sparks, like the proverbial bat out of hades.

By and by this was changed. Two ranches, one owned by William Thomas, and the second one the property of Mary Wall, located at the edge of the swamp about three miles east of the struggling town of Reno marked the spot which the railroad officials eventually selected as a good place to move the plant from Wadsworth. The outlook did not appear too promising. But those were the days of highball railroading, the western country was still much undeveloped, and such a change like moving the division point from one place to another was not as radical as might appear superficially. Those were the days when the motor car and the paved road were still a part of the future. Railroading, then, was an art, a rugged industry and the men who managed the roads were practical dreamers unafraid to venture big things, and the men whose labor operated the lines had a deep sense of pride in their achievement. Almost every youngster's ambition was centered around the desire to be a fireman or an engineer on the locomotives. There was a gripping fascination about railroading which captured the fancy of many a young man living in the West.

Like many other things the railroads and their officials made many changes to meet the changing times.

Wadsworth, east of Reno, was handicapped because of an inadequate water supply with which to care for a greatly enlarged community that would surely come as a result of railroad expansion and development.

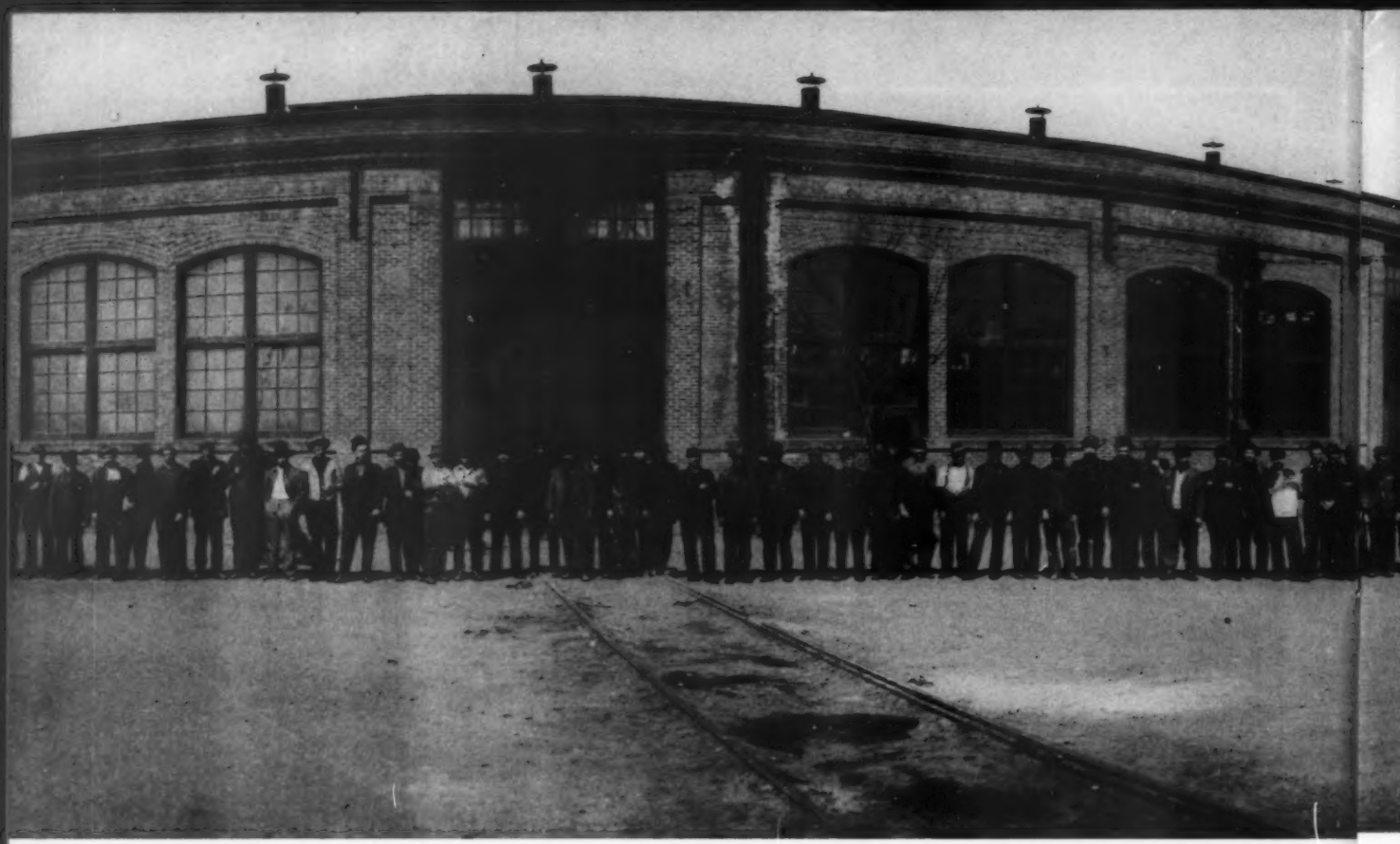
Wadsworth, at the time, had a railroad depot, dispatchers' office, switching yards, division headquarters, and in the town

B Street is a segment of transcontinental Highway US 40 as it passes through the city of Sparks, Nevada.

Main business section of Sparks is contained on the north side of B Street beginning at Seventeenth.

Beyond the round house section many resident properties continue to the eastern edge of town.

Southern Pacific's Number 27, starting westward with four diesel units. More diesels are in the background.



A large number of Southern Pacific employees in the Sparks yards posed for this picture some time after 1906, in front of the main entrance to the big roundhouse.

itself there was a hotel, a number of dwelling houses, a few business shops, and the homes of railroaders. The company decided to pick up Wadsworth bag and baggage and transplant the small community, with its human cargo, 30 miles farther west.

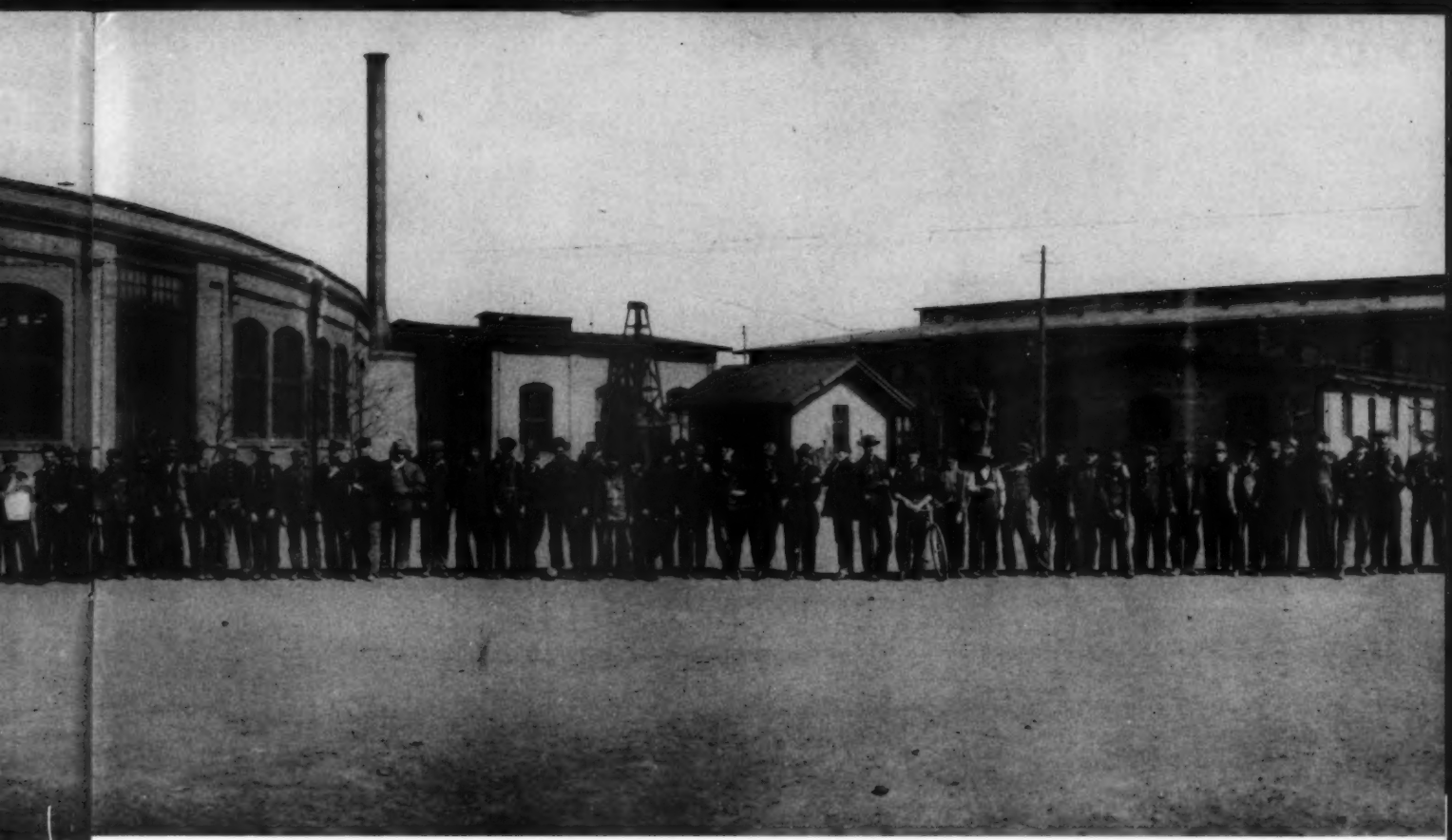
It was the original plan to set up a division point at Reno. That place showed signs of growing to a sizeable town and it would be a suitable place for an industrial addition. The Southern Pacific planned to build shops, terminal yards, roundhouse, a repair shop, and other facilities to meet the growing need for increased services on the line. Railroad officials felt that to locate in Reno involved a greater outlay of cost than they had considered reasonable so they moved the plant three miles east, secured ownership of the two ranches and the swamp, and started building.

Work of grading and constructing tracks and buildings at the new terminal of Sparks was started in 1902 and 1903 and actually the move from Wadsworth to Sparks was accomplished in 1904. The station at Sparks was opened to the public for the convenience of passengers and the freight house was ready for business on October 5, 1905.

Among those who packed their bags and baggage at Wadsworth and migrated to the new town was a former assistant chief dispatcher at Sparks who said it was a strange sight to see those private homes and railroad houses sawed into sections, then loaded on flat cars, and moved to Sparks, leaving only the lawns and trees behind. All employees who owned their homes in Wadsworth were given lots in the new townsite which, when first plotted, was known as "Harriman." This name was changed some time later and the name of Sparks was substituted. It has remained so ever since. The town which mushroomed so rapidly bore little resemblance to the modern small city of today with its attractive homes, fine business houses, public buildings, and a school system of which Nevadans can well be proud.

In its time of existence, Wadsworth was twice the victim of disastrous fires which almost wiped out the town. After the second fire, some of the employees had not long been settled in new homes when word came that the railroad terminal was to be moved. Naturally some of the citizens were disappointed but nearly all of them accepted the news with good spirit. The railroad company bought a tract of land, called it "Reserve," and let the oldest employee home owners draw for their choice of lots. Those with senior service had first choice and the scheme worked out very well.

Some of the buildings in the present Sparks yards were also moved in from Wadsworth. These included the assistant superintendent's office, the dispatchers' quarters and also the yard fence. The large machine shops, roundhouse, locomotive repair shops, and other terminal units were newly built. The terminal facilities thereby were greatly enlarged. When the California fruit growers began finding ready eastern markets for their products, the problem of caring for perishable goods became acute and had to be solved. The Pacific Fruit Express planned and constructed large icing facilities at Sparks for the purpose of providing ice for the refrigerator cars containing the fruit moving eastward. Because of such icing units located at strategic places along the line, California fruit can be delivered in the eastern part of the country in tip-top condition.



**Building with the smokestack is the powerhouse. The one to the right is part of the repair shops in the Sparks division yards.**

Southern Pacific provides Sparks with its biggest industry. The railroad yards, plus the other facilities, spread over an area of approximately 2,200 acres, and represent a tremendous financial investment to sustain one of the most modernly equipped division terminals of the road. The monthly payroll approximates a quarter million dollars, and this large, steady sum finds its way into all channels of local business and enterprise.

Railroaders and their families are among Sparks' most substantial citizens. Their activities in civic and social affairs contribute much to the cultural life and progress of the community. A considerable portion of the more than a million dollars which the Southern Pacific and its affiliated companies pay in taxes on Nevada's property each year goes to the support of the schools in Sparks as well as to other parts of the State.

The Sparks terminal links the Salt Lake and Sacramento divisions of the railroad. Staff officers who supervise operations on the western end of the Salt Lake (or Ogden) division have their headquarters here. It is also here that train crews change and locomotives, like the giant cab-in-front type operating over the Sierra Nevada mountains, give way to the powerful but perhaps lighter, conventional engines for the much easier hauls eastward; that passenger and freight trains are inspected and serviced; that the streamliner "City of San Francisco," and the fast Overland Limited, are given careful inspection and running gear serviced; that livestock is unloaded for rest and feeding; that long trains of refrigerator cars loaded with perishable fruit and vegetables are re-iced; and locomotives and cars are shopped for certain types of repairs.

In the repair shop, facilities are available for rebuilding, in entirety if necessary, big locomotive jobs. Heavy overhead cranes, which lift a set of driver wheels like a child would pick up a toy; machine tools of the latest design for working steel and rimming wheels; pressure machines which set together truck wheels as easy as you could crush a match; blacksmith and forging departments equipped for all manner of jobs; storage facilities for fuel and parts, and a mammoth roundhouse which can accommodate locomotives of all sizes, where they can be serviced and repaired under roof, are also located here.

In recent years, many diesel units have been added to the company's rolling stock on this important division and these also are serviced and repaired in the Sparks yards. The dieselization of the road continues steadily, and there are now in use almost as many diesels as there are of the old oil burning steamers which served so well. Diesels haul trains both ways, eastward and westward, demonstrating their efficient pulling power over mountain stretches and have proved themselves capable of negotiating the heavy grades across the Sierras while pulling long freights. The Sparks yards have about 30 miles of trackage and the adjoining Reno yards add about 10 miles more. During some months more than 30,000 freight and passenger cars are handled through the yards. Many switch engines are needed to move this great volume of traffic efficiently and these switchers, to a great measure, have now become diesels. However, the crews always keep a boiler hot in the roundhouse on some of the oil burners, ready for instant use, just in case of emergency.

There was a time when it was not an unusual chore to turn

The Robert Mitchell School in Sparks is one of the finest educational buildings of its kind in the State.

The Sparks City Hall houses all city offices, plus the fire department, in this busy railroad town in western Nevada.

**Large numbers of ring-necked pheasants have been raised by the Parkers, of Sparks, for many years.**

as many as 950 engines on the roundhouse turntable during one month's work. Even today this heavy piece of equipment, which handles the biggest of the locomotives with ease, is kept pretty busy most of the time.

Activities of the Pacific Fruit Exchange constitutes a major part of the terminal operations. This subsidiary, jointly owned by the Southern Pacific and Union Pacific railroad companies, maintains large icing plants along the entire system. The P. F. E. has facilities at Sparks for the generation of 360 tons of ice daily and a storage capacity for approximately 18,000 tons of ice. The "island deck" type of ice loading platform, stretching for almost a mile on the south side of the yards, can handle as many as 160 cars at one time.

Occasionally, these days, one notes a few refrigerator cars in the long trains of fruit going through Sparks eastbound, which have their own individual icing plant attached to the trucks of the car. These plants operate as the car rolls along. However, some of the old-timers will tell you that "moist" ice is still very much in favor.

Sparks is just one of several Nevada cities founded by the railroad. In fact, the coming of the line through the West in the early days was vital to the country's development. On April 1, 1863, a Central Pacific Railroad surveyor drove the first stake for the townsite of Reno when that transcontinental line was under construction eastward across the State. In July of that year the same surveying gang laid out the town of Wadsworth. Rails of the Central Pacific were laid down pretty fast, mostly by hand labor, over the comparatively level terrain of Nevada and the first trains were operated through what is now Sparks, on July 22, 1868. It was May 10, 1869, before the through line from Sacramento to Chicago was opened for traffic. The comparatively level terrain prevails because the right of way follows, as nearly as practicable, the valleys in the crossing of eastern Nevada.

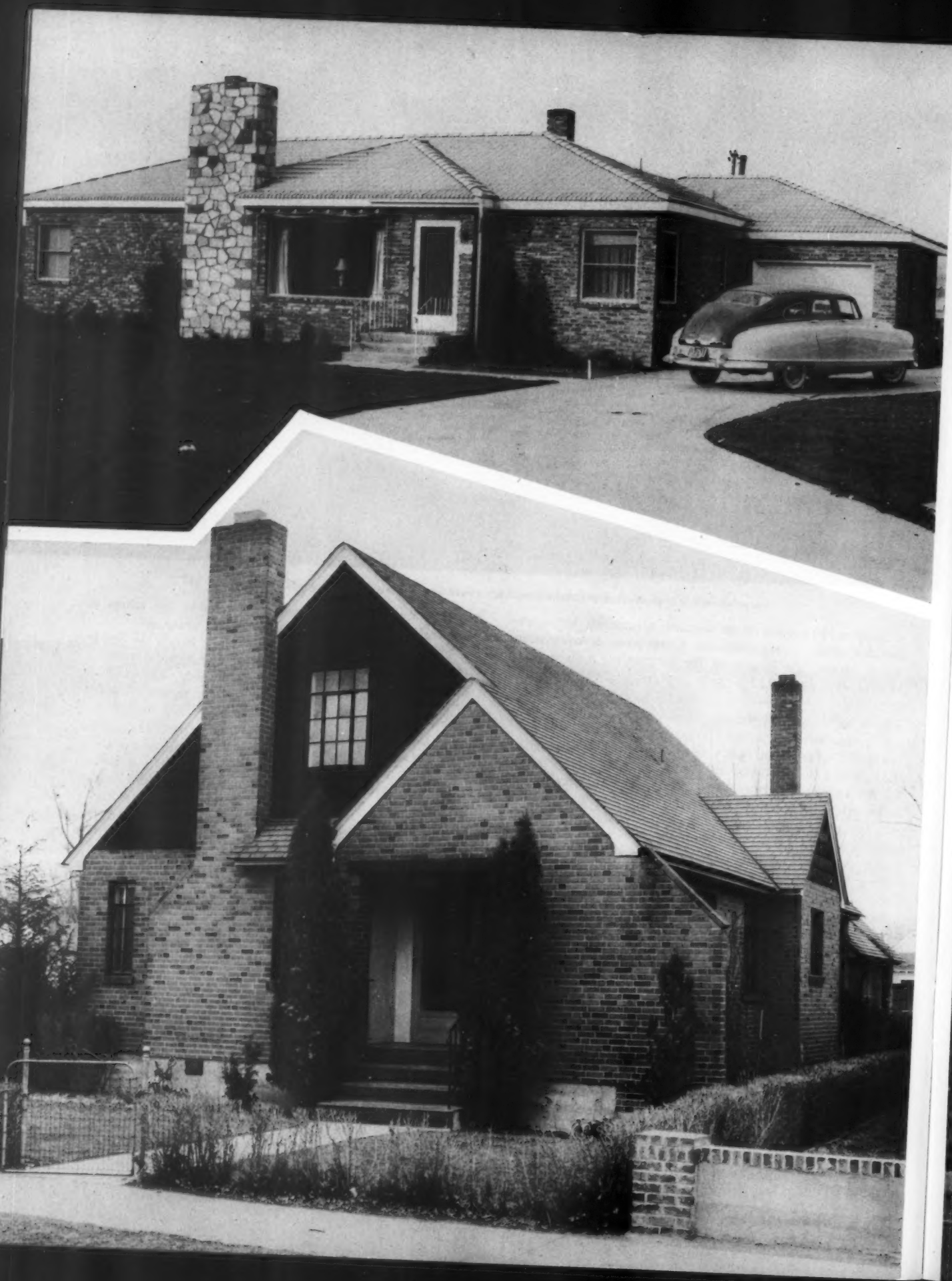
When the terminal began its operation at Sparks the Southern Pacific was using engines of the 200 class, or 10-wheelers, in freight service. These, with tender loaded, weighed about 200,000 pounds and developed a tractive power of about 18,500 pounds.

Later, the mammoth cab-in-front locomotives, which have been in use over the mountain stretches west of Sparks for a number of years, are more than five times heavier and have seven times more pulling power than the older type. Reason for using the cab-in-front type is to give the locomotive crews better visibility while traveling through the tunnels and the long snowsheds in the high Sierras. With the cab in front of the engine the crews have an unobstructed view of the track ahead, without any fogging because of trailing smoke from the engine stack.

Most passenger locomotives used out of Sparks in 1904 were of the 1400 class of eight wheelers. They weighed about 250,000 pounds loaded for service and had tractive power of 21,240 pounds. These would now be dwarfed if set alongside the 821,000 pound 4-8-4's of today which develop 74,710 pounds of tractive force.

These larger sizes can hardly be compared with the diesel type of locomotive, rapidly replacing the steamers, because the diesels are usually tied together in units ranging from two to four. Each diesel unit will develop 2,300 horsepower and for "over the hill" traffic three, and sometimes four, units are ganged for the pull.

Advancement in locomotive design and efficiency has been matched in improved freight equipment and modernized pickup and delivery freight services and in the luxuriously



Just one of the many tourist courts located in the Sparks area. This one is along U S 40 just west of town.

comfortable air-conditioned passenger cars which have revolutionized train travel enjoyment during the past decade or so. Air brake freights, air-conditioned sleepers, radio equipped lounge cars, automatic control for block systems, and telephone service from front to rear of train, are all a part of the modernization and maintenance in western railroading, and the Sparks yards personnel are constantly improving their service facilities to handle these new pieces as rapidly as they are adopted.

The city of Sparks is a modern business community, with progressive leaders at the head of both business affairs and the city government. While the city is a close neighbor, and in some things a rival, of the larger city of Reno, Sparks is zealous of its independent setup and does not relish any reference to itself as a Reno suburb. In fact, it is anything but that. The citizens of the two closely adjacent communities, while bantering a friendly rivalry, get along splendidly in their business dealings as well as their social contacts. Sparks has its own city government, its city council, justice courts, fire department, police department and jealously guards its jurisdiction over these services. There is, however, a deep friendly spirit existing between the two cities, and each is always ready to respond to any call for help in an emergency.

One singular feature concerning Sparks is the fact that its main business thoroughfare is almost a mile long and business shops and stores are set on the north side of the street only. This is due to the fact that when the original plat was laid out for moving the shops to Sparks, the railroad company reserved the right to exclude from the south side any business houses and sought to distribute the land on the south side of the street for residential purposes. While this is not a rigid rule its practice has been observed for many years. In the interim of growth of this progressive little city of western Nevada the citizens have not lost sight of recreational needs in their desire for utility. Down the center of the street a wide parkway exists, along which hundreds of trees have matured during the past 50 years and now give Sparks a most pleasing appear-

Left—Sparks folks take a deep pride in their homes. While these residences are not elaborate they typify the real homey community.

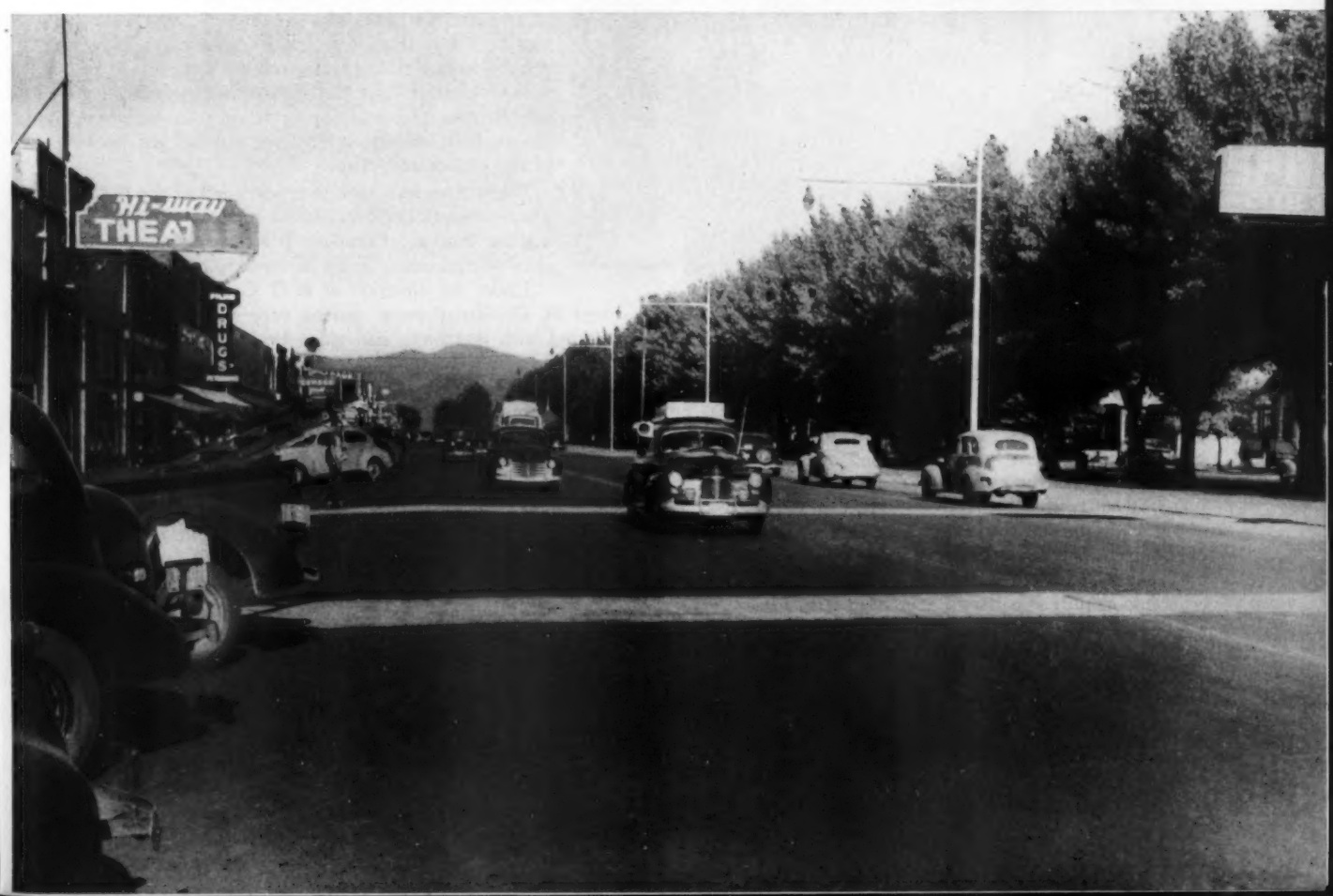
Looking north on 17th Street, at B, in Sparks, Nevada. Many miles of paved streets serve this modern, inviting Nevada community.

Air view of part of the rail yards, and the country to the southwest of the rail city. White building in right center is the main ice plant of the Pacific Fruit Express.

Main gate into the yards of the Southern Pacific establishment showing a portion of the roundhouse in which locomotives of all sizes are serviced.

Another view of the city of Sparks, which shows the business and residential districts. Like many other western cities, Sparks has enjoyed a healthy growth since 1904.

B Street, running east and west in Sparks, comprises the main business thoroughfare and is also a segment of highway U S 40.



ance of a tree-lined thoroughfare as its main business street. It also provides a place for a public band stand, and a parkway is ideal for picnics in the summertime. On the south are the switching yards and division terminal facilities, stretching the entire length of the town.

North of B Street, citizens of Sparks have developed a substantial and delightful residential area. The community enjoys many miles of paved streets, lined with rows of trees and parking lawns, and flowers are to be seen everywhere. Most of the citizens are home owners.

The people of Sparks also delight in telling the tourist and the visitor that the town is the gateway to the famous Pyramid Lake region, 30 miles north. Pyramid Lake, in northwestern Washoe County, is about 22 miles long and 10 miles wide, affords good fishing and has colorful scenic surroundings. In the open country beyond the Sparks city limits good hunting can be had in season.

Sparks, like many other western towns, has enjoyed considerable growth during the past few years, and this has added several residential additions to its corporate outlines. These additions have been built to take care of the steady influx of residents and increased population. With all modern conveniences available in the railroad city of Sparks, it has progressed with the times. However, it's main economic standby remains the Southern Pacific plant and as long as these are located in Sparks the city can look forward to sustained economic advancement.

**Train crew of earlier days which worked out of the Sparks division, showing what the well-dressed railroad man wore in those days.**

The two cities of Sparks and Reno now are almost as one, development having reached directly to the dividing line. Frequent bus schedules serve both communities. Sparks' main economic stability remains the Southern Pacific plant.

PHOTOGRAPHIC CREDITS

Pages 1, 8, 9, 12, 13, 16, 17, 20, 21, 24, 25, 26, bottom page 29, all Highway Department staff photographer; pages 2, 4, 5, 6, 7, 10, 11, 14, 15, courtesy Mackay School of Mines, from Guernsey Fraser collection; top and bottom page 18, pages 22, 23, courtesy of Fred Steiner, Sparks; center page 18, pages 30 and 31, courtesy Jane Ward, Sparks, Nevada.

## *From Desolate Desert to a City of Destiny*

*(Continued from page fifteen)*

BMI had its inception in the dream of two stalwart Nevadans—George P. Thatcher, Reno attorney, a native son, and Jack Lowman, a Nevadan by adoption, who convinced American industrialists that such a plant in Nevada was practical.

Then unfolded a story of cooperation between American and British interests, represented by Howard P. Eells, Jr., of Cleveland, Ohio, and Major C. J. P. Ball, president of Magnesium Elektron, Ltd., of Manchester, England. Major Ball, in 1923, had purchased the manufacturing rights for magnesium from the I. G. Farbenindustrie of Germany, and enlisted the service of German technicians to build a magnesium plant in England.

Howard Eells, who served with Douglas MacArthur in France during World War I, comes from an old Cleveland family which has long been interested in finance and industry.

Basic Refractories, an Eells company making refractory brick, was searching for magnesite. This he found in large deposits in the hills at Gabbs, Nevada.

In 1941, Eells learned of Magnesium Elektron's success in the production of magnesium in England. He contacted Major Ball, proposing that Britsh "know how" and American finance join forces to make magnesium in the United States.

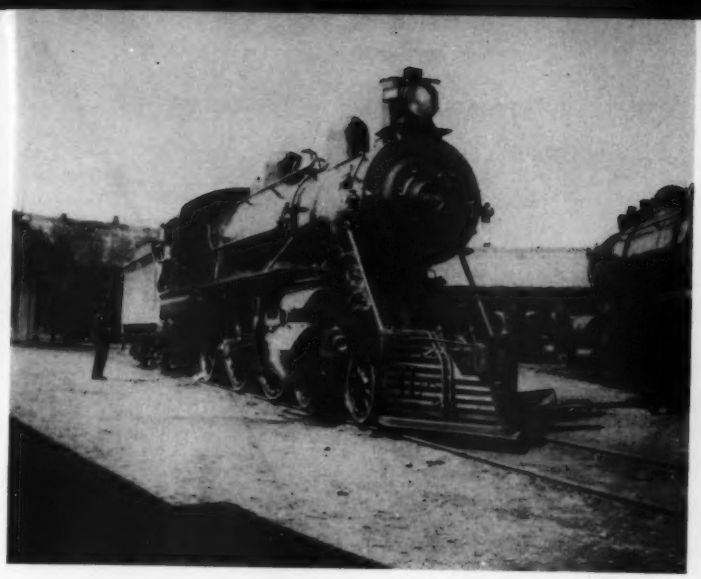
The result was the formation of Basic Magnesium, Incorporated. Defense Plant Corporation, a World War II federal agency, agreed to finance the plant. A contract was signed in August 1941, and ground was broken by mid-September. The first magnesium was produced on August 31, 1942, less than a year after the shovels had taken their first bites into the empty desert near Las Vegas. From that date production steadily increased until all units of the gigantic industry were in operation.

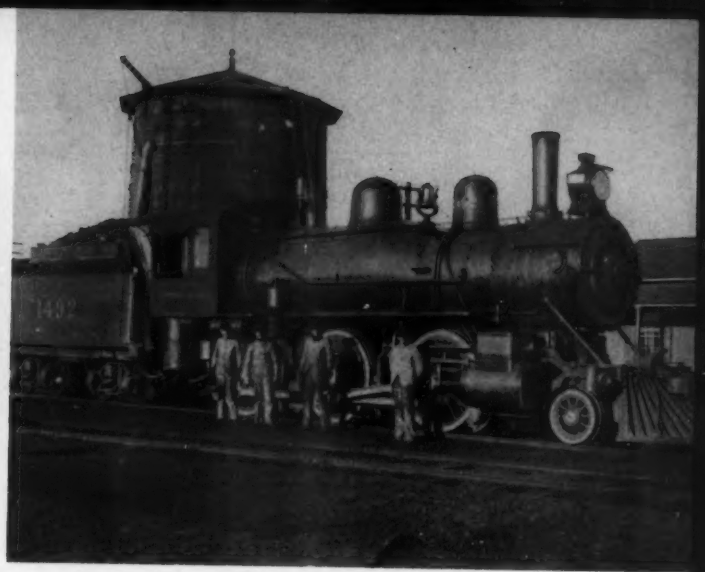
In October 1942, at the request of Eells and the government, the Anaconda Copper Mining Company bought out the Eells interests in BMI and assumed management of the project and plant.

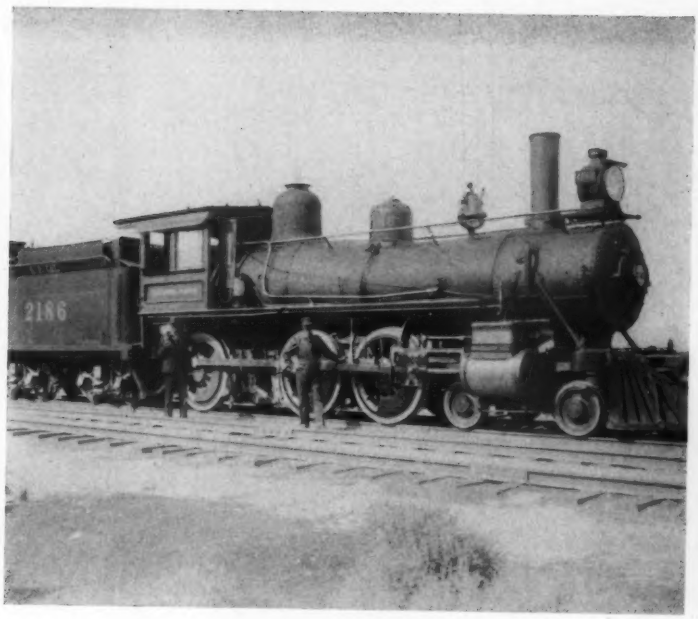
When Anaconda took over operation of the big BMI plant, James R. Hobbins became president of Basic Magnesium, Inc., and Cornelius J. Kelly was named chairman of Anaconda's board of directors.

Under the direction of F. O. Case, general manager, and H. G. Satterthwaite, general superintendent, both connected with Anaconda, and aided by a staff of expert technicians, many improvements were made in the original process. These improvements were gradually included in the flow sheet and continued until the plant eventually closed down, because the war had come to an end, and magnesium was no longer in critical demand.

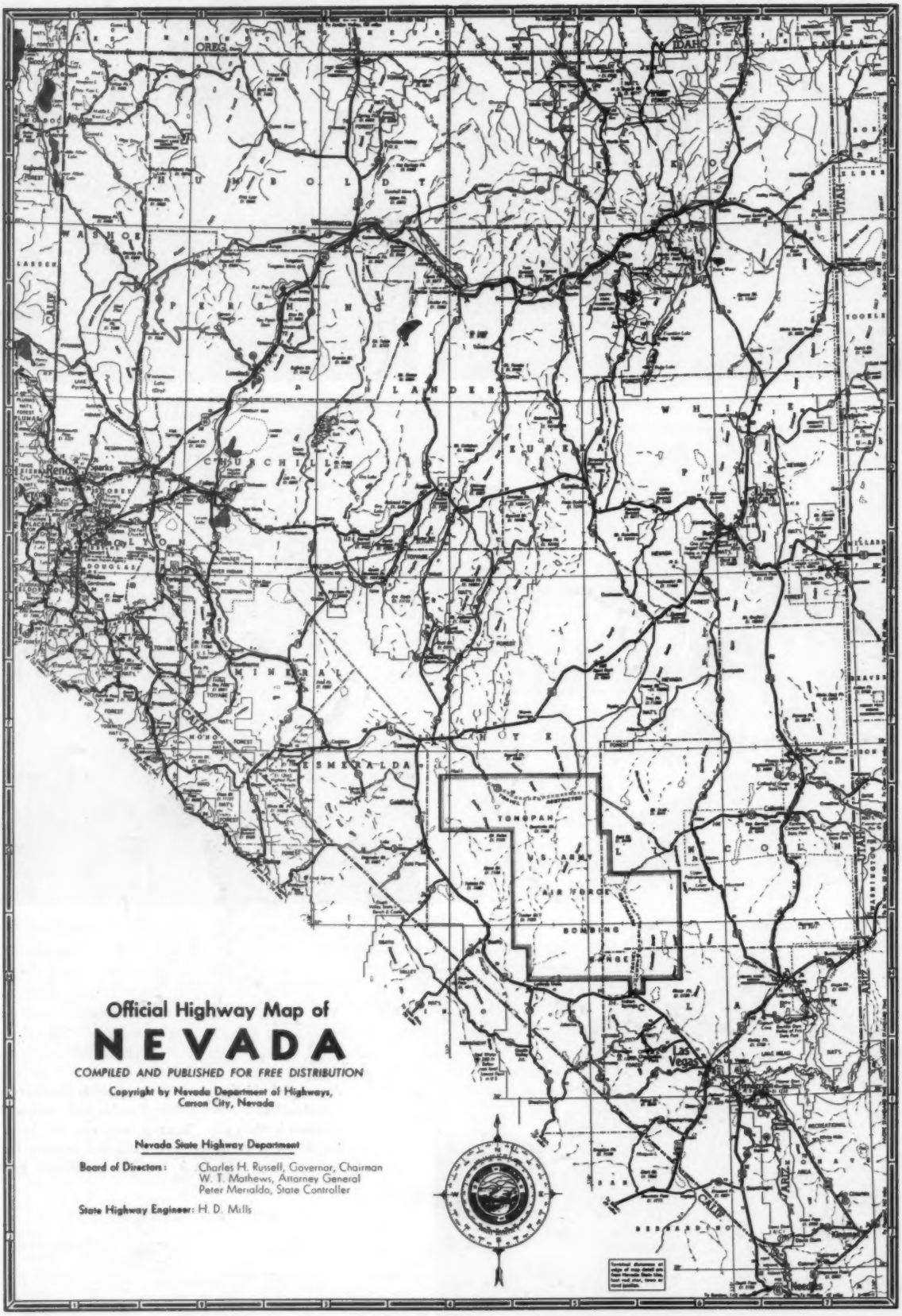
At the Henderson plant concentrates were mixed with coal, peat moss and magnesium chloride, which mix was formed into cakes that were dried in oven kilns or rolled into pellets. The dried cakes were processed in 80 big electric furnaces called chlorinators. Chlorine gas was introduced into these chlorinators transforming magnesium oxide into anhydrous magnesium chloride. Molten chloride and other chemicals, tapped off, were poured into electrolytic cells of which there were 880. Direct current was introduced, the chlorine passed off and the metallic magnesium, rising to the surface, was skimmed and poured into "cheeses," which became billets, slabs and ingots.







A group of old-timers which would tickle the fancy of many a railroad fan. Five different styles and designs, all top-notchers in their day. Some of them may still be in service, but it seems their days are numbered because the diesels are crowding them back into the roundhouse pretty fast.




# Official Highway Map of
# NEVADA

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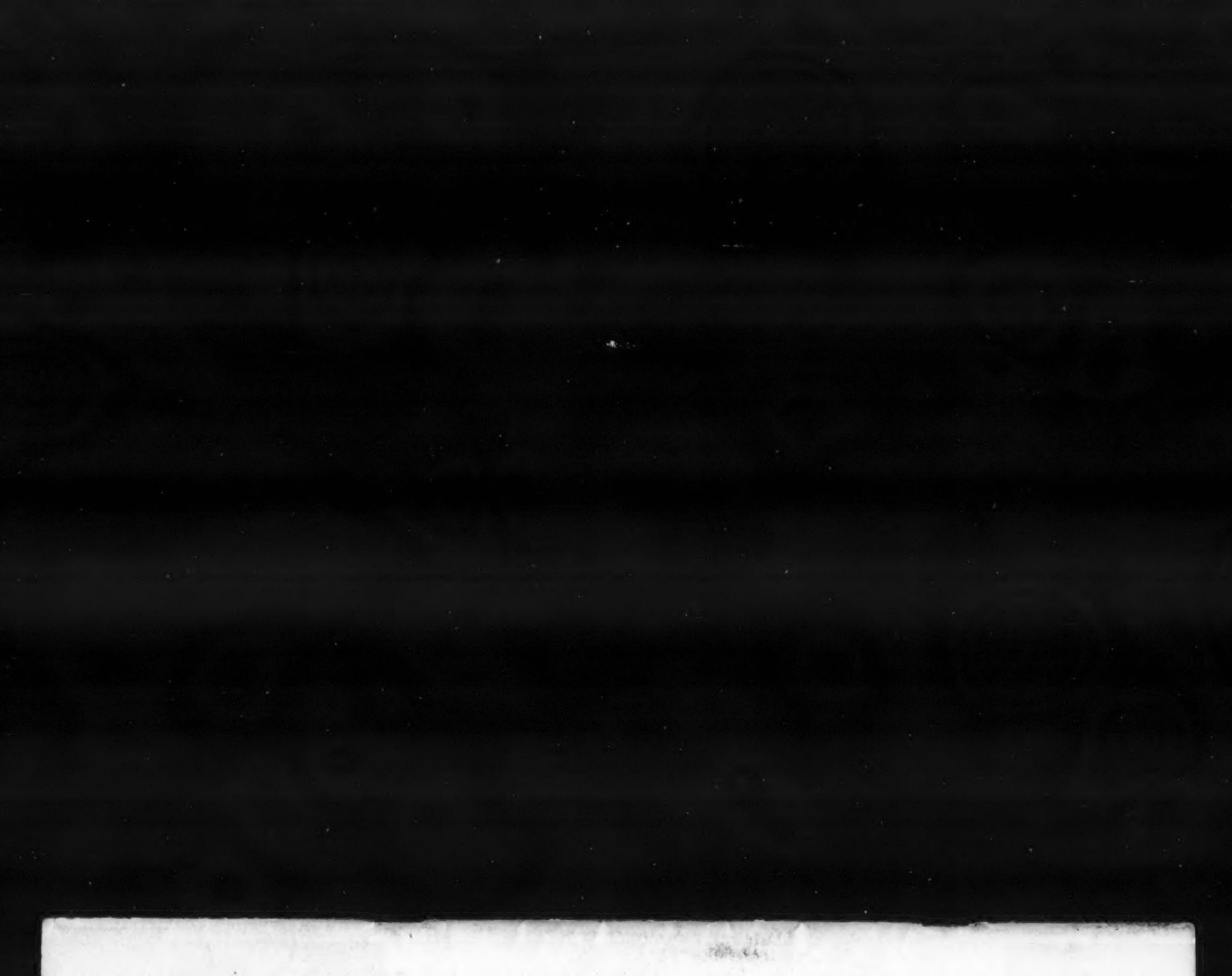
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